IN THE CLAIMS

1. (Withdrawn) A method of forming a disulfide bond, the method comprising reacting an organic compound comprising at least one thiol group with a compound of formula I:

$$R-S-X-R^1 \qquad I$$

wherein:

X denotes SO_2 or Se;

R denotes an organic moiety; and

R^1 denotes an optionally substituted alkyl group, an optionally substituted phenyl group, an optionally substituted pyridyl group or an optionally substituted naphthyl group;

with the proviso that when X denotes SO_2 then R^1 does not denote optionally substituted alkyl.

2. (Withdrawn) A method according to claim 1, wherein the organic compound comprising at least one thiol group is an amino acid, a peptide or a protein.

3. (Withdrawn) A method of chemically modifying a protein, peptide or amino acid comprising at least one thiol group, the method comprising reacting said protein, peptide or amino acid with a compound of formula I:

$$R-S-X-R^1 \qquad I$$

wherein:

X denotes SO_2 or Se;

R denotes an organic moiety; and

R^1 denotes an optionally substituted alkyl group, an optionally substituted phenyl group, an optionally substituted pyridyl group or an optionally substituted naphthyl group;

with the proviso that when X denotes SO_2 then R^1 does not denote optionally substituted alkyl.

4. (Withdrawn) A method according to claim 1, wherein R is a carbohydrate group.

5. (Withdrawn) A method according to claim 1, wherein R^1 is phenyl.

6. (Withdrawn) A method according to claim 1, wherein X is Se.

7. (Withdrawn) A method according to claim 1, wherein X is SO_2.

8. (Withdrawn) A compound of formula I:

$$R-S-X-R^1 \qquad I$$

wherein:

X denotes SO_2 or Se;

R denotes a carbohydrate moiety; and

R^1 denotes an optionally substituted alkyl group, an optionally substituted phenyl group, optionally substituted pyridyl group or an optionally substituted naphthyl group;

with the proviso that when X denotes SO_2, then R^1 does not denote optionally substituted alkyl.

9. (Withdrawn) A compound according to claim 8 wherein R^1 is phenyl.

10. (Withdrawn) A compound according to claim 8, wherein X is Se.

11. (Withdrawn) A compound according to claim 8, wherein X is SO_2.

12. (Withdrawn) A method for preparing a compound of formula I as defined in claim 11, said method comprising reacting a compound of formula II:

$$M(SSO_2R^1)_k \qquad \text{II}$$

wherein:

M denotes a metal, for example Li, Na, K, Ca, Cs, Zn, Mg, or Al; and

k denotes 1, 2 or 3;

with a compound of formula III:

$$R—L \qquad \text{III}$$

wherein:

L denotes a leaving group.

13. (Withdrawn) A method for preparing a compound of formula I as defined in claim 11, said method comprising reacting a disulfide compound of formula VIII:

$$R—S—S—R$$

VIII

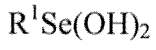
with a sulfinite anion of formula $R^1SO_2^-$ in the presence of silver ions.

14. (Withdrawn) A method for preparing a compound of formula I as defined in claim 10, said method comprising reacting a compound of formula V:

V

with a compound of formula VIa or VIb:

VIa



VIb

wherein L^2 denotes Br, Cl, CN, or I.

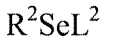
15. (Withdrawn) Use of a compound of formula I as defined in claim 1, in disulphide bond formation.

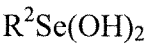
16. (Withdrawn) Use of a compound of formula I as defined in claim 1, for modifying a protein, a peptide or an amino acid comprising at least one thiol group.

17. (Withdrawn) Use of a compound of formula I as defined in claim 8, for glycosylating a protein, a peptide or an amino acid comprising at least one thiol group.

18. (Withdrawn) A method of chemically modifying a protein, peptide or amino acid comprising at least one thiol group, the method comprising converting said thiol group into a selenenylsulfide group.

19. (Withdrawn) A method according to claim 18, wherein the conversion is carried out by reacting the protein, peptide or amino acid comprising at least one thiol group with a compound of formula Xa or Xb:





Xa Xb

wherein:

L^2 denotes a leaving group; and

R^2 denotes an optionally substituted alkyl group, an optionally substituted phenyl group, an optionally substituted benzyl group, an optionally substituted pyridyl group or an optionally substituted naphthyl group, or R^2 forms part of or is attached to a solid support.

20. (Withdrawn) A method according to claim 19, wherein R^2 is phenyl.

21. (Withdrawn) A method according to claim 19, wherein the compound of formula Xa or Xb is PhSeBr.

22. (Withdrawn) A method according to claim 18, further comprising reacting the selenenylsulfide group in the protein, peptide or amino acid with an organic compound containing a thiol group.

23. (Previously Presented) A method of chemically modifying a protein, peptide or amino acid comprising at least one selenenylsulfide group, the method comprising reacting the protein, peptide or amino acid with a carbohydrate compound comprising a thiol group.

24. (Withdrawn) A method according to claim 22, wherein the organic compound is a carbohydrate compound.

25. (Withdrawn) A method according to claim 22, wherein the organic compound is a protein, peptide or amino acid.

26. (Withdrawn) A protein, peptide or amino acid comprising at least one selenenylsulfide group, wherein the selenenylsulfide group is a group of formula:

$$-S-Se-R^2,$$

wherein R^2 denotes an optionally substituted alkyl group, an optionally substituted phenyl group, an optionally substituted benzyl group, an optionally substituted pyridyl group or an optionally substituted naphthyl group.

27. (Canceled)

28. (Withdrawn) A protein, peptide or amino acid comprising at least one selenenylsulfide group which is obtainable by the method of claim 18.

29. (Withdrawn) A protein, peptide or amino acid comprising at least one disulfide bond which is obtainable by the method of claim 22.

30. (Canceled)

31. (Previously Presented) The method according to claim 23, wherein the protein, peptide or amino acid comprising at least one selenenylsulfide group is a group of formula: protein-S-Se-Ph.

32. (Previously Presented) The method according to claim 23, wherein the protein is SBLCys156 and the thiol group is GlcSH.